

Appendix table 6-53.

Distribution of citations in U.S. scientific and technical articles to other U.S. articles, by sector and field:
1990–93 and 1994–97

Citing sector	Citing year	Total U.S. citations	Percentages of citations to:							
			U.S. total	Academia	Industry	Federal Govt.	FFRDCs	Nonprofit sector	Other govt.	Unknown sector
Total science and engineering										
U.S. Total	1990–93	690,032	100	70.9	7.6	9.2	2.5	8.5	0.9	0.4
	1994–97	709,043	100	71.9	7.2	8.3	2.4	8.9	0.7	0.5
Academic	1990–93	509,285	100	77.1	5.5	7.1	1.8	7.3	0.7	0.4
	1994–97	526,821	100	77.6	5.5	6.4	1.8	7.6	0.6	0.4
Industry	1990–93	44,362	100	47.3	35.0	7.7	3.0	5.9	0.5	0.5
	1994–97	42,980	100	50.3	31.5	7.3	2.4	7.4	0.5	0.6
Federal Govt.	1990–93	56,927	100	52.5	6.4	30.4	2.1	7.3	1.0	0.4
	1994–97	54,933	100	54.2	6.3	28.6	2.1	7.4	1.0	0.5
FFRDCs	1990–93	15,722	100	48.2	10.5	7.0	30.6	3.4	0.2	0.2
	1994–97	17,117	100	51.8	8.8	7.0	28.5	3.4	0.2	0.3
Nonprofit	1990–93	54,443	100	59.7	5.0	8.2	1.0	24.3	1.1	0.7
	1994–97	58,717	100	60.2	5.4	7.1	0.9	24.8	0.9	0.7
Other govt.	1990–93	5,785	100	59.6	4.0	12.1	0.7	9.8	12.9	0.9
	1994–97	5,086	100	60.5	4.8	11.2	0.7	10.0	11.6	1.2
Unknown	1990–93	3,511	100	63.9	7.3	9.2	1.5	11.9	1.9	4.3
	1994–97	3,389	100	63.6	6.9	9.2	1.2	13.0	1.7	4.4
Physics										
U.S. Total	1990–93	60,148	100	60.6	20.8	5.1	11.9	1.5	0.0	0.1
	1994–97	56,908	100	66.7	14.6	5.5	11.6	1.5	0.0	0.2
Academic	1990–93	40,458	100	70.6	15.0	3.6	9.2	1.4	0.0	0.1
	1994–97	41,381	100	74.7	11.3	4.0	8.6	1.4	0.0	0.1
Industry	1990–93	9,050	100	34.6	53.6	3.7	7.1	0.8	0.0	0.1
	1994–97	5,242	100	40.0	46.2	5.0	7.6	0.9	0.0	0.3
Federal Govt.	1990–93	3,202	100	42.6	16.8	30.1	8.9	1.3	0.0	0.3
	1994–97	3,098	100	46.6	13.6	30.7	7.5	1.3	0.0	0.3
FFRDCs	1990–93	6,501	100	44.2	14.2	3.2	37.1	1.3	0.0	0.1
	1994–97	6,440	100	47.8	11.1	3.3	36.7	0.9	0.0	0.2
Nonprofit	1990–93	806	100	53.9	11.9	6.3	8.8	18.8	0.0	0.4
	1994–97	642	100	56.3	8.5	5.3	9.2	20.6	0.0	0.3
Other govt.	1990–93	8	100	61.3	9.7	12.9	6.5	0.0	9.7	0.0
	1994–97	12	100	70.8	6.3	10.4	10.4	0.0	2.1	0.0
Unknown	1990–93	124	100	49.7	23.7	8.9	12.9	2.2	0.0	2.6
	1994–97	94	100	56.7	20.6	6.4	11.2	1.6	0.0	3.7
Chemistry										
U.S. Total	1990–93	42,364	100	77.6	12.6	4.1	4.3	1.2	0.1	0.1
	1994–97	44,494	100	77.6	11.8	4.1	4.1	2.1	0.1	0.2
Academic	1990–93	33,565	100	85.0	8.3	2.4	3.2	0.9	0.1	0.1
	1994–97	35,503	100	84.7	8.3	2.4	3.0	1.4	0.1	0.1
Industry	1990–93	4,834	100	48.0	43.5	4.0	2.8	1.3	0.1	0.3
	1994–97	4,380	100	48.7	41.8	4.3	2.6	2.1	0.1	0.3
Federal Govt.	1990–93	1,622	100	44.5	12.4	37.2	3.3	2.0	0.2	0.3
	1994–97	1,642	100	43.4	11.2	39.4	3.1	1.9	0.6	0.4
FFRDCs	1990–93	1,549	100	51.2	10.4	3.9	33.6	0.8	0.0	0.1
	1994–97	1,874	100	56.8	8.6	3.2	30.3	0.9	0.0	0.1
Nonprofit	1990–93	647	100	61.4	10.9	5.4	2.1	19.8	0.2	0.2
	1994–97	967	100	52.2	11.6	3.7	2.2	29.8	0.3	0.3
Other govt.	1990–93	79	100	55.2	11.1	14.6	2.2	2.9	13.7	0.3
	1994–97	69	100	54.4	15.3	14.2	3.3	4.0	8.4	0.4
Unknown	1990–93	70	100	56.1	22.7	10.1	5.0	2.5	0.0	3.6
	1994–97	59	100	62.3	19.5	8.9	1.7	5.9	0.4	1.3

See explanatory notes, if any, and SOURCE at end of table.

Appendix table 6-53.

Distribution of citations in U.S. scientific and technical articles to other U.S. articles, by sector and field:
1990-93 and 1994-97

Citing sector	Citing year	Total U.S. citations	Percentages of citations to:							
			U.S. total	Academia	Industry	Federal Govt.	FFRDCs	Nonprofit sector	Other govt.	Unknown sector
Earth and space sciences										
U.S. Total	1990-93	32,236	100	65.5	5.0	14.5	8.3	5.8	0.6	0.3
	1994-97	35,858	100	66.0	4.7	14.4	8.0	6.1	0.6	0.4
Academic	1990-93	21,880	100	71.8	4.0	11.4	6.6	5.4	0.5	0.3
	1994-97	24,560	100	72.6	3.5	10.9	6.3	5.8	0.5	0.4
Industry	1990-93	1,531	100	48.5	21.5	17.2	7.2	3.5	1.6	0.5
	1994-97	1,474	100	46.2	22.3	18.9	7.9	2.8	1.1	0.7
Federal Govt.	1990-93	4,288	100	49.3	5.3	33.0	8.0	3.5	0.6	0.3
	1994-97	4,683	100	48.6	5.8	33.5	7.5	3.4	0.7	0.5
FFRDCs	1990-93	2,440	100	51.7	4.4	12.6	26.0	4.8	0.2	0.3
	1994-97	2,939	100	52.1	4.1	13.5	25.0	4.6	0.3	0.4
Nonprofit	1990-93	1,756	100	62.2	2.7	7.7	6.3	20.4	0.2	0.4
	1994-97	1,900	100	61.6	2.6	8.9	5.3	20.8	0.3	0.5
Other govt.	1990-93	198	100	51.2	7.6	15.8	3.0	3.4	18.6	0.5
	1994-97	176	100	54.3	10.7	14.8	2.1	2.4	14.4	1.1
Unknown	1990-93	144	100	54.0	8.5	18.1	5.7	7.3	0.9	5.4
	1994-97	127	100	53.5	9.6	17.9	7.5	5.1	2.0	4.3
Mathematics										
U.S. Total	1990-93	3,740	100	87.6	5.1	2.6	2.7	1.8	0.1	0.2
	1994-97	3,375	100	89.7	3.5	2.6	1.6	2.3	0.1	0.1
Academic	1990-93	3,287	100	90.4	4.1	1.7	2.0	1.6	0.1	0.1
	1994-97	3,030	100	92.0	2.8	1.8	1.2	2.0	0.1	0.1
Industry	1990-93	153	100	65.7	26.2	2.8	4.3	1.0	0.0	0.0
	1994-97	113	100	70.7	19.8	4.4	3.1	1.6	0.2	0.2
Federal Govt.	1990-93	136	100	65.0	6.3	21.9	3.3	2.9	0.2	0.4
	1994-97	90	100	66.4	5.3	24.4	1.1	2.5	0.3	0.0
FFRDCs	1990-93	81	100	63.0	4.9	1.2	29.9	0.6	0.0	0.3
	1994-97	65	100	64.8	7.3	7.7	18.8	1.1	0.4	0.0
Nonprofit	1990-93	65	100	78.8	4.6	3.5	0.0	12.7	0.4	0.0
	1994-97	62	100	73.9	3.2	4.0	0.8	16.5	0.8	0.8
Other govt.	1990-93	7	100	74.1	3.7	3.7	0.0	18.5	0.0	0.0
	1994-97	5	100	84.2	0.0	0.0	0.0	0.0	15.8	0.0
Unknown	1990-93	12	100	71.7	8.7	4.3	0.0	4.3	0.0	10.9
	1994-97	9	100	88.6	5.7	2.9	0.0	2.9	0.0	0.0
Biology										
U.S. Total	1990-93	30,321	100	78.1	2.9	13.5	1.0	3.2	1.0	0.3
	1994-97	28,571	100	76.7	3.1	14.0	1.1	3.6	1.0	0.5
Academic	1990-93	23,685	100	84.6	2.4	8.6	0.8	2.6	0.8	0.3
	1994-97	22,131	100	83.3	2.5	9.2	0.9	2.9	0.8	0.4
Industry	1990-93	892	100	61.7	20.9	11.5	0.9	3.5	1.0	0.5
	1994-97	867	100	58.7	21.1	14.2	0.9	3.8	0.8	0.5
Federal Govt.	1990-93	4,041	100	49.4	2.4	44.0	0.7	1.9	1.2	0.3
	1994-97	3,901	100	49.6	2.7	42.7	0.9	2.5	1.2	0.5
FFRDCs	1990-93	281	100	63.0	1.8	10.2	21.2	2.9	0.4	0.4
	1994-97	286	100	62.7	2.0	11.7	19.0	3.8	0.7	0.3
Nonprofit	1990-93	956	100	64.2	2.5	7.8	0.6	23.4	1.1	0.5
	1994-97	981	100	63.1	2.2	9.1	1.2	22.3	1.1	0.9
Other govt.	1990-93	313	100	62.2	1.6	14.8	0.7	3.6	16.5	0.6
	1994-97	277	100	57.7	2.8	19.4	1.4	3.8	13.5	1.4
Unknown	1990-93	153	100	71.6	4.4	14.6	0.5	3.1	1.8	3.8
	1994-97	128	100	61.9	4.3	15.0	1.4	4.9	1.8	10.5

See explanatory notes, if any, and SOURCE at end of table.

Appendix table 6-53.

Distribution of citations in U.S. scientific and technical articles to other U.S. articles, by sector and field:
1990–93 and 1994–97

Citing sector	Citing year	Total U.S. citations	U.S. total	Percentages of citations to:						
				Academia	Industry	Federal Govt.	FFRDCs	Nonprofit sector	Other govt.	Unknown sector
Biomedical research										
U.S. Total	1990–93	220,576	100	71.8	7.1	9.4	1.3	9.7	0.5	0.2
	1994–97	239,216	100	73.3	6.9	7.6	1.4	10.1	0.4	0.2
Academic	1990–93	165,090	100	77.0	5.6	7.3	1.0	8.5	0.4	0.2
	1994–97	179,669	100	78.1	5.4	6.0	1.2	8.8	0.3	0.2
Industry	1990–93	12,813	100	52.9	26.7	9.1	1.7	8.9	0.5	0.3
	1994–97	14,383	100	54.8	26.2	6.9	1.6	9.8	0.4	0.4
Federal Govt.	1990–93	19,018	100	54.3	7.0	28.6	1.3	8.1	0.5	0.2
	1994–97	18,518	100	57.9	6.4	25.1	1.6	8.4	0.4	0.3
FFRDCs	1990–93	2,602	100	56.1	9.1	9.6	17.6	7.2	0.2	0.1
	1994–97	3,074	100	59.5	7.9	8.3	16.8	7.1	0.2	0.3
Nonprofit	1990–93	19,106	100	60.6	6.9	7.9	1.0	22.9	0.5	0.3
	1994–97	21,756	100	62.4	6.6	6.1	1.1	23.2	0.3	0.3
Other govt.	1990–93	1,355	100	59.1	6.4	10.3	1.0	8.7	14.1	0.4
	1994–97	1,236	100	59.7	7.1	9.2	1.0	9.7	12.7	0.4
Unknown	1990–93	591	100	66.1	8.8	9.5	1.5	11.0	1.1	1.8
	1994–97	580	100	65.7	8.3	9.9	1.3	11.3	0.9	2.6
Clinical medicine										
U.S. Total	1990–93	234,096	100	67.9	5.0	11.2	0.5	13.0	1.6	0.7
	1994–97	236,121	100	67.8	6.2	10.0	0.5	13.3	1.4	0.8
Academic	1990–93	165,198	100	73.1	3.7	9.4	0.4	11.3	1.5	0.6
	1994–97	166,041	100	72.9	4.8	8.5	0.4	11.5	1.2	0.8
Industry	1990–93	11,746	100	50.0	27.1	10.0	0.7	10.1	1.0	1.0
	1994–97	13,632	100	50.0	28.7	8.2	0.5	10.8	0.9	0.9
Federal Govt.	1990–93	21,909	100	53.5	4.7	28.9	0.6	10.0	1.7	0.6
	1994–97	20,289	100	54.7	5.4	26.9	0.6	10.1	1.6	0.7
FFRDCs	1990–93	1,068	100	48.8	7.2	15.6	17.2	9.8	0.9	0.5
	1994–97	1,243	100	52.2	8.1	12.3	16.2	10.0	0.8	0.4
Nonprofit	1990–93	28,964	100	58.4	3.8	8.8	0.4	26.1	1.6	0.9
	1994–97	30,251	100	58.2	4.7	7.9	0.3	26.5	1.2	1.0
Other govt.	1990–93	3,307	100	58.8	3.2	12.8	0.4	12.0	11.9	1.0
	1994–97	2,826	100	60.1	3.8	11.8	0.3	12.1	10.8	1.3
Unknown	1990–93	1,904	100	62.5	5.6	9.4	0.4	15.5	2.2	4.4
	1994–97	1,839	100	61.2	5.8	9.3	0.3	17.2	2.0	4.3
Engineering and technology										
U.S. Total	1990–93	15,210	100	62.9	20.2	7.2	8.0	1.4	0.1	0.3
	1994–97	14,732	100	65.3	17.8	8.0	7.1	1.4	0.1	0.4
Academic	1990–93	10,247	100	75.1	14.0	4.6	5.0	1.0	0.1	0.2
	1994–97	10,311	100	76.1	12.7	5.3	4.5	1.1	0.1	0.3
Industry	1990–93	2,569	100	38.2	50.0	5.3	5.0	1.1	0.1	0.3
	1994–97	2,060	100	40.5	46.2	6.3	4.8	1.4	0.1	0.7
Federal Govt.	1990–93	1,034	100	38.6	14.8	38.7	6.1	1.3	0.1	0.3
	1994–97	1,102	100	39.9	15.0	37.8	5.6	1.3	0.1	0.3
FFRDCs	1990–93	1,077	100	33.7	12.1	6.4	46.5	1.1	0.0	0.2
	1994–97	1,046	100	37.4	14.8	6.9	39.1	1.2	0.0	0.5
Nonprofit	1990–93	211	100	43.8	18.5	5.3	5.6	26.3	0.1	0.4
	1994–97	148	100	46.1	17.1	6.9	5.1	23.3	0.3	1.2
Other govt.	1990–93	15	100	62.7	11.9	5.1	3.4	0.0	16.9	0.0
	1994–97	14	100	66.1	8.9	16.1	0.0	0.0	7.1	1.8
Unknown	1990–93	59	100	50.0	30.5	6.4	7.6	2.5	0.4	2.5
	1994–97	51	100	48.5	27.7	10.4	6.9	3.5	0.0	3.0

See explanatory notes, if any, and SOURCE at end of table.

Appendix table 6-53.

Distribution of citations in U.S. scientific and technical articles to other U.S. articles, by sector and field:
1990-93 and 1994-97

Citing sector	Citing year	Total U.S. citations	Percentages of citations to:							
			U.S. total	Academia	Industry	Federal Govt.	FFRDCs	Nonprofit sector	Other govt.	Unknown sector
Psychology										
U.S. Total	1990-93	19,404	100	89.8	1.1	3.0	0.1	3.9	1.0	1.0
	1994-97	18,597	100	90.2	0.8	2.9	0.1	3.8	1.2	1.0
Academic	1990-93	17,370	100	91.7	1.0	2.3	0.1	3.2	0.9	0.9
	1994-97	16,686	100	91.9	0.7	2.4	0.1	3.1	1.1	0.9
Industry	1990-93	205	100	75.2	11.3	3.5	0.1	5.7	1.7	2.7
	1994-97	187	100	77.0	7.9	5.5	0.3	6.3	0.9	2.1
Federal Govt.	1990-93	644	100	72.3	1.4	20.2	0.0	4.0	1.3	0.7
	1994-97	546	100	73.8	1.3	18.1	0.2	4.2	1.7	0.8
FFRDCs	1990-93	26	100	77.9	3.8	2.9	5.8	7.7	1.9	0.0
	1994-97	18	100	77.8	1.4	2.8	9.7	2.8	2.8	4.2
Nonprofit	1990-93	720	100	73.6	1.3	3.1	0.1	18.2	1.5	2.3
	1994-97	718	100	74.1	0.9	3.0	0.0	18.7	1.4	1.7
Other govt.	1990-93	225	100	79.0	1.1	3.7	0.3	4.8	9.5	1.7
	1994-97	210	100	77.0	1.2	3.5	0.0	5.1	11.3	1.9
Unknown	1990-93	214	100	76.5	2.6	2.7	0.0	7.1	2.2	8.8
	1994-97	232	100	78.2	1.1	4.2	0.2	6.8	2.0	7.4
Social sciences										
U.S. Total	1990-93	12,104	100	88.4	1.3	4.1	0.6	4.6	0.5	0.5
	1994-97	11,943	100	86.9	1.4	4.3	0.6	5.7	0.5	0.5
Academic	1990-93	10,869	100	90.5	1.2	3.3	0.4	3.8	0.4	0.5
	1994-97	10,555	100	89.5	1.1	3.3	0.5	4.8	0.4	0.4
Industry	1990-93	131	100	69.8	11.5	6.9	3.2	6.9	0.6	1.1
	1994-97	161	100	64.3	16.7	7.6	1.4	6.8	2.0	1.1
Federal Govt.	1990-93	460	100	70.8	1.5	19.7	0.4	6.6	0.5	0.5
	1994-97	471	100	65.3	1.9	23.0	0.9	7.4	0.9	0.6
FFRDCs	1990-93	59	100	56.0	3.4	6.0	26.1	7.3	1.3	0.0
	1994-97	73	100	60.5	5.5	4.8	18.9	7.6	1.4	1.4
Nonprofit	1990-93	475	100	70.5	1.3	5.1	0.9	20.8	0.4	0.9
	1994-97	554	100	69.6	1.5	5.7	0.6	21.5	0.5	0.5
Other govt.	1990-93	57	100	73.6	3.1	5.3	3.1	1.8	12.3	0.9
	1994-97	58	100	73.4	3.9	3.9	0.4	3.4	12.4	2.6
Unknown	1990-93	56	100	79.6	3.1	4.9	0.0	4.9	2.7	4.9
	1994-97	69	100	75.1	4.3	5.4	1.4	8.3	1.8	3.6
Health and professional										
U.S. Total	1990-93	19,836	100	85.7	3.3	4.1	0.4	4.0	1.3	1.2
	1994-97	19,230	100	85.5	3.0	3.9	0.3	4.8	1.3	1.1
Academic	1990-93	17,637	100	88.5	2.8	3.1	0.3	3.3	1.0	1.0
	1994-97	16,953	100	88.4	2.5	3.0	0.3	3.9	1.0	1.0
Industry	1990-93	440	100	63.0	23.5	5.5	1.0	4.4	1.2	1.2
	1994-97	482	100	65.5	20.2	4.7	0.7	5.6	1.5	1.8
Federal Govt.	1990-93	575	100	58.1	4.0	24.3	1.0	7.1	4.2	1.4
	1994-97	593	100	60.1	3.4	21.8	0.7	8.0	4.5	1.5
FFRDCs	1990-93	37	100	68.0	3.4	6.1	12.9	8.8	0.7	0.0
	1994-97	58	100	67.4	4.7	5.6	8.6	11.2	1.3	1.3
Nonprofit	1990-93	735	100	67.1	3.2	7.6	1.5	15.6	2.7	2.4
	1994-97	740	100	64.3	2.9	7.5	1.1	19.1	2.9	2.3
Other govt.	1990-93	222	100	55.4	3.3	15.9	1.1	8.1	13.9	2.4
	1994-97	202	100	61.3	2.8	9.9	0.4	8.8	14.2	2.6
Unknown	1990-93	188	100	69.1	3.9	5.2	1.2	9.6	4.1	6.9
	1994-97	202	100	71.3	4.3	5.4	0.4	9.7	2.8	6.1

FFRDC = Federally Funded Research and Development Center

NOTE: Details may not add to total because of rounding.

SOURCES: Institute for Scientific Information, Science Citation and Social Science Citation Indexes; CHI Research, Inc., Science Indicators database; and National Science Foundation, Division of Science Resources Studies (NSF/SRS), special tabulation.

See page 6-44 in Volume 1.